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# A Longitudinal Study of Transitional and Immersion Bilingual Education Programs in One District

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## Abstract

This article describes a longitudinal evaluation of 2 approaches to the education of language-minority students—transitional bilingual education and a new approach, bilingual immersion—in El Paso, Texas. Rationales for both programs are provided along with a brief description of the factors that led to the development of the bilingual immersion approach. Students' ($N$ = 228) achievement on the Iowa Tests of Basic Skills was traced from grades 4 through 7. Results indicated significant effects favoring bilingual immersion in language and reading in grades 4–6, but not in the seventh grade. Students taught with bilingual immersion entered the mainstream more rapidly, as designed. Questionnaire responses ($N$ = 307) also indicated that teachers appeared to be much more satisfied with the rapid but systematic introduction of English in the bilingual immersion program than the relatively slow introduction in the transitional program. 60 students' reactions to the 2 programs in interviews were not significantly different on any variable.

The current wave of immigrants to the United States, the largest in history (U.S. Department of Commerce, 1990), has had a profound effect on elementary education. The range of cultures and native languages represented among these immigrants poses major challenges to bilingual education programs across the country. Some of the recent immigrants—be they from Mexico, Central America, Cambodia, or other parts of Southeast Asia—have had little formal schooling (Foster, 1980; Kleinman & Daniel, 1981; Maingot, 1981; Marx, 1981). Teachers are thus often confronted with students not only new to English but with limited exposure to print materials at home (Teale, 1986). This limited exposure is likely to lead to subsequent academic problems unless instruction in the elementary grades is recon-

ceptualized (Goldenberg & Gallimore, 1991; Teale, 1986).

Over the past 15 years, the field of bilingual education has grappled with the problem of how and when to introduce English-language instruction in school. Many early English as a Second Language (ESL) programs stressed grammar and usage in a decontextualized fashion. Over the past 10 years, ESL programs have emphasized more natural, conversational instructional methods (McLaughlin, 1985).

Recently, ESL programs have begun to emphasize merging second-language instruction with reading, language arts, and content-area instruction. This has been stimulated by insights from research by Allen (1989), Au (1992), Barrera (1984), Chamot and O'Malley (1989), Elley and Mangubhai (1983), and Flores (1982). Many of these researchers have utilized contemporary approaches to literacy instruction as a basis for enhancing English language development.

When researchers have integrated English-language instruction with content-area instruction in subjects such as mathematics, science, and social studies, results have also been promising (Chamot & O'Malley, 1989). This emerging body of research has had a profound effect on the manner in which English is introduced to limited-English-proficient students.

As much as the thinking in the field has advanced, evaluation of bilingual education programs continues to produce considerable debate and uncertainty (Lam, 1992; Meyer & Fienburg, 1992). There is still a good deal of argument, for example, about the other central question in bilingual education—*when* to introduce students to intensive English-language academic instruction (Crawford, 1989; McLaughlin, 1985). Some educators hoped that a recent federally supported, large-scale evaluation study of numerous school districts throughout the country conducted by Ramírez (1992) would resolve this issue. Unfortunately, the results were inconclusive.

Ramírez (1992) attempted to determine the best time to move students into classes taught only in English. In some programs, virtually all instruction from first grade on was in English. In others, English-language instruction in academic subjects did not begin until the fourth or fifth grade. A third approach involved giving students almost all instruction in Spanish 1 year and all instruction in English the following year. These researchers' 5-year longitudinal evaluation involved a rich range of measures, including academic assessments in both English and Spanish and classroom observations documenting the language used for instruction. Among the three approaches evaluated, the only clear finding was that academic performance was significantly worse in the school district where students spent 1 year in the program that was virtually all Spanish and the next year received all instruction in English. The researchers concluded that this type of drastic transition from one language to another is likely to be highly problematic for students. Regrettably, we have found that this rapid transition occurs often in large urban districts (Gersten & Woodward, 1994).

Discouraging and confusing as the lack of significant differences among programs may appear, such results have forced researchers to redefine research topics as well as to constrain and more clearly delineate the scope of bilingual investigation. In a recent, comprehensive review of bilingual research, Cziko (1992) noted that large-scale evaluations of bilingual education models will yield results of only limited interest. Even within a given model (e.g., transitional bilingual education, structured immersion), one is likely to find diverse instructional practices, especially in evaluations that encompass several school districts (Lam, 1992; Tikunoff, 1985).

Still, a good deal could be learned from exploratory *longitudinal* research conducted within one district in which different instructional models and underlying philosophies are reasonably well defined. Al-

though in our experience such a situation is not easy to find, the El Paso, Texas, school district provides a unique opportunity for this type of research: two well-defined but different models for educating language-minority students are widely implemented there. A longitudinal comparison of these two approaches as they are implemented in the El Paso district is the major focus of this article. The models and their historical rationales are described in the following section through an overview of some of the major issues and controversies in the field of bilingual education in the 1980s.

## Two Approaches to Transition

As we mentioned earlier, a major source of controversy in the field of bilingual education is when to move students into English-language instruction. Those favoring an *immersion* approach believe that this transition should be made as early as first grade (Genesee, 1984; Northcutt & Watson, 1986). They argue that students can acquire English while learning academic content if English is introduced systematically and gradually. Other bilingual educators believe that the transition should be more gradual and that native-language instruction should be used throughout the student's entire elementary schooling. Although a variety of terms describe this approach, we use *transitional bilingual education* throughout this article to describe this method. Most bilingual programs for Latino students in the United States struggle to find the right balance between English-language learning and academic content acquisition. El Paso has offered programs reflecting both viewpoints since 1984. The following sections briefly present the thinking behind each approach.

### Transitional Bilingual Education

Wong-Fillmore and Valadez (1986) offered a concise rationale for the transitional bilingual education model as the best way to ensure high levels of literacy for language-minority students. They argued that although students who are limited in English proficiency "can acquire decoding skills relatively easily . . . they have considerably greater difficulty making sense of the materials they read. . . . This attests to the necessity of knowing the language before reading it. If reading involves the act of making intelligible to oneself written texts of any complexity beyond that of street signs, it is not possible to read in a language one does not know" (p. 661). They inferred from research that premature transfer of students into all-English academic programs would interfere with the development of higher-order thinking (Krashen, 1982; Moll & Díaz, 1986).

Wong-Fillmore and Valadez (1986) argued that such placement leads to instructional materials that are simplified or "watered down" to meet students' perceived competence. "A common reaction to the less-than-fluent English of a student is to teach content from a lower grade level and to expect only lower-level cognitive skills, such as simple recall" (Chamot & O'Malley, 1989, p. 114). Thus, the predominant use of simplified materials can lead to unnecessary constraints on students' cognitive growth (Ramírez, 1992). Furthermore, premature transition into all-English programs is likely to stifle use of Spanish in the home and community (Cziko, 1992; Wong-Fillmore & Valadez, 1986).

Our own observations (Gersten, in press), as well as those of Moll and Díaz (1986), have shown that teachers frequently fail to modify content-area instruction so that it is comprehensible to students who are still mastering the English language (Long, 1983). This failure to adapt instruction can lead to a schism between teachers' instruction and students' understanding. As a result, many students fail to acquire key concepts in the content areas (Krashen & Terrell, 1983).

For these reasons, teachers in transitional bilingual programs conduct academic instruction in students' primary language until students (*a*) demonstrate an adequate grasp of English, thus enabling them to suc-

ceed in classes with English-language academic instruction, and (*b*) exhibit competence in academic areas in their native language. One goal of transitional bilingual education is increased mastery of concepts in mathematics, social studies, and other content areas since they are taught in Spanish, the language that students understand the best. Transitional bilingual education is widely implemented in communities with large numbers of Latino students such as El Paso.

Immersion

In the 1980s, an innovative but controversial alternative to transitional bilingual education was introduced in the United States. There were several reasons for this. One was the large influx of Southeast Asian students speaking many different languages—Lao, Cambodian, Vietnamese. Districts no longer had 20 or 30 students at a given grade who spoke the same language, so transitional bilingual education was not viable. Furthermore, there were few qualified teachers who spoke Hmong or Cambodian.

Districts began experimenting with forms of immersion or "sheltered English" (Northcutt & Watson, 1986). Language-minority students were taught English as they learned math. The key to this method was that English instruction was *comprehensible*—it was sensitive to students' English proficiency. In this respect, sheltered English programs were an advancement over earlier "submersion" approaches that placed language-minority students in general education classes with little or no support.

Immersion and sheltered English advocates believed that the greater the systematic exposure to English at school, the more likely students were to begin to use English spontaneously—both in conversations with peers and in academic interactions. The results of these programs appeared promising in both elementary (Gersten, 1985; Gersten, Taylor, Woodward, & White, 1984) and secondary schools (Chamot & O'Malley, 1989). The early versions of English immersion tended to include little or no native-language instruction—even for very young students (Gersten & Woodward, 1985). For this reason, many bilingual educators perceived immersion negatively (Castellanos, 1983; Crawford, 1989; Mackey, 1978).

Recognizing the validity of some of the concerns raised by critics of sheltered English, yet feeling strongly that English could and should be introduced systematically through academic instruction in language arts, math, and reading in the early grades, contemporary advocates of the immersion approach propose a method that integrates second-language instruction with content-area materials. This approach is sometimes called *bilingual immersion.* This approach retains the predominant focus on English-language instruction from the immersion model but tempers it with a substantive, 4-year Spanish-language program so that students maintain their facility with their native language. The use of the English language arts and reading instruction to foster the rapid acquisition of English language at both conversational and conceptual levels is a cornerstone in the evolution of bilingual immersion.

## Purpose of the Longitudinal Analyses

Like many evaluations of its scope, the Ramírez (1992) study had several serious flaws. The researchers were unable to compare sheltered English to transitional bilingual education as it is commonly practiced ("late exit") within the same district. In addition, they failed to assess achievement of sheltered students in grades 5 and 6; only transitional bilingual education students were assessed at those grades. This is a crucial shortcoming, since assessment of the effects of instructional programs over time is especially important in the area of language acquisition (Gersten et al., 1984). This may be one reason why Ramírez

(1990, 1992) found no significant differences among the approaches.

The purpose of the longitudinal study was to examine the effects of two methods of bilingual education developed and used in the El Paso, Texas, school district: transitional bilingual education and bilingual immersion. Unlike Ramírez (1992), we compared an immersion approach to a transitional bilingual education approach *within the same school district,* where resources, length of the school year, class size, and other relevant variables are similar. In addition, unlike students in the Ramírez sample, all students in our study began first grade as limited English proficient.

The longitudinal data also enabled us to examine effects of the two programs through the seventh grade. The research reported in this article compares effects of transitional bilingual education and bilingual immersion on academic achievement over 4 years—3 years longer than the Ramírez (1992) study. By this time, all students in both programs had entered mainstream English instruction.

This longitudinal analysis does not constitute a formal test of either the effectiveness or validity of either approach. Of course, actual implementation of either method in classrooms was not completely faithful to its theoretical descriptions (Schneider, 1990). However, the size of our sample and the span of our longitudinal evaluation do allow an exploration of the long-term effects of the two approaches on students, and we have also included detailed descriptions of each approach as implemented in El Paso.

## Method

### Measures

***Achievement.*** The major measure in this study was achievement on the Iowa Tests of Basic Skills (ITBS) in grades 4, 5, 6, and 7. During these 4 years students spent most of their school day in English-language instruction. Prior to the fourth grade, comparisons would have been unfair, since students spent very different amounts of time in English-language instruction. Beginning in grade 4, the district routinely tested all second-language students, except for recent immigrants, on the ITBS in English.

***Qualitative data.*** We augmented achievement data with data from teacher questionnaires and student interviews. This provided an indication of what teachers saw as strengths and weaknesses of the two programs and how students viewed their experiences in the programs.

***Rate of entry into mainstream classes.*** A critical indicator of the success of any bilingual instruction program for language-minority students is the rate at which students leave specialized classes for second-language learners and enter mainstream classes. All students in the sample completed at least 5 years of either bilingual immersion or transitional bilingual education. Data were collected in the spring of 1990 on this variable, when the students in the longitudinal sample were in the sixth grade.

### Procedures

The next two sections provide a brief overview of the transitional and immersion bilingual education programs as implemented in El Paso. (For further details, see Gersten, Woodward, & Schneider, 1992.)

***Transitional bilingual education.*** This program began in 1970. Until 1984, it included all limited-English-proficient students in the city (Teschner, 1990). During this period, the El Paso Independent School District had one of the largest transitional bilingual education programs in Texas and in the United States.

The El Paso program is consistent with the framework for transitional bilingual education described previously. Subject matter and concepts in all academic areas are initially taught in the student's primary language—Spanish. The goal is to develop skills and abilities in oral and written communication and reading comprehension in

the student's primary language. This means that at beginning levels, students are taught in Spanish for the majority of the day. They learn to read in Spanish, learn math in Spanish, and later receive instruction in science and social studies in Spanish.

English as a Second Language (ESL) instruction begins in first grade for about 1 hour a day. A natural language (Cummins, 1989) approach is utilized. The program initially focuses on functional and conversational English and then moves into the vocabulary concepts used in academic instruction. Academic instruction in English begins gradually by the late second grade. When students' English skills have developed to a certain point, they begin the transitional phase (formal reading instruction in English) of the program and receive instruction in English during content-area classes. The goal is to teach academic content in English in such a way that instruction is comprehensible to students (Krashen, 1982). Typically, students do not begin all-English instruction until grades 4 or 5.

***Bilingual immersion.*** In 1984, a group of educators in El Paso, Texas, developed an innovative form of bilingual education specifically for Hispanic students. This approach stresses English-language instruction presented in the context of content instruction (e.g., reading and language arts, mathematics, social studies, and science). The overriding goal, however, is to deliver instruction in a meaningful, comprehensible fashion. Bilingual immersion involves accelerating the introduction of English while maintaining Spanish as a basis for conceptual development, clarification, and cultural identity.

A group of teachers and members of the Latino community in El Paso felt that transitional bilingual education had failed to capitalize on students' burgeoning knowledge of the English language. Though hardly fluent in English, these students quickly acquired the rudiments of conversational English. After all, El Paso is a bilingual city, and its students learn English through TV, radio, and what they hear in the community and at school. Also, because El Paso is a bilingual/bicultural city, many parents and teachers did not fear that an emphasis on English in the schools would threaten students' ethnic identity and self-concept.

The bilingual immersion program utilizes a range of instructional strategies to give students frequent exposure to ideas presented in the English language and opportunities to express their own ideas in English (written and oral) and to learn English. The program intentionally introduces students to large units of language through an emphasis on children's literature. The range of English-language-related experiences includes journal writing, semistructured discussions about stories read by the entire class, and guided discussion of social studies concepts.

Students in the immersion program are not corrected when they ask or answer questions in Spanish during the English-language portion of the day. However, during the English reading, language arts, and math lessons, the teacher makes every attempt to conduct the lesson in English. The teacher always speaks English. If students' Spanish-language responses alert the teacher to a problem, he or she uses a variety of techniques—concrete objects, gestures, multiple explanations in English—to explain or clarify the concept in English.

A native-language (Spanish) component plays an important role in grades 1–4. This component lasts approximately 90 minutes a day in the first grade and is gradually reduced to 30 minutes in the fourth grade. The objective of the component is to have students develop concepts, literacy, cognition, and critical thinking skills in Spanish. During this period, instruction and student-teacher interaction are entirely in Spanish.

### Student Sample

Students were included in the sample who (*a*) were classified as exhibiting virtually no knowledge of English on begin-

ning first grade (as assessed by a district-developed oral-language assessment), (*b*) participated for at least 4 years in one of the district's two programs for language-minority students, and (*c*) took the ITBS in the areas of language, reading, mathematics, and vocabulary. The sample included only those limited-English-proficient students who began one of the two instructional programs in first grade and continued in the program until they were deemed eligible for mainstream instruction (typically 4–6 years).

Ten schools with large proportions of limited-English-proficient students were involved; five of the schools implemented bilingual immersion, and five implemented transitional bilingual education. Sample sizes for the longitudinal analyses were 111 for the bilingual immersion sample and 117 for the transitional bilingual education sample. The decision as to whether or not to implement bilingual immersion was made by the school principal in consultation with the faculty. Five of the 18 schools implementing transitional bilingual education and five of the 19 schools implementing bilingual immersion were selected to participate in the longitudinal study by the district research office. All of the schools served low-income families; over 93% of the students in the longitudinal samples received free or reduced lunch. Data were collected between 1985 and 1991.

### Comparability of Longitudinal Samples

A quasi-experimental design was utilized since random assignment of schools to program type was infeasible. In quasi-experimental designs, it is essential to examine comparability of samples. The two samples were similar demographically. In the bilingual immersion sample, 92.1% of the students received a free or reduced lunch, which was comparable to the 94.2% of the transitional bilingual education students who received a free lunch.

***English proficiency.*** There was a slight difference in assessed English-language proficiency between the two samples on entry into the first grade, the year the district tests each student on a locally developed measure of English-language proficiency, the Oral Language Dominance Measure (OLDM; El Paso Independent School District, 1989). Scores on the measures range from 1 to 5, with a 1 indicating virtually no fluency in English, 3 equaling minimal fluency, and 5 for good fluency. It is important to note that virtually all students in both the bilingual immersion (94%) and transitional bilingual education (97.5%) samples received scores of 1 or 2 (extremely limited English-language proficiency) on entry into first grade. Only one-half of 1% of the students in each sample were classified as demonstrating more than the most rudimentary proficiency in English. Mean scores on the OLDM were 1.24 for the immersion sample and 1.08 for the transitional bilingual education sample; standard deviations were .63 and .42, respectively. Because of the slight difference favoring the immersion group, analysis of covariance was utilized in all subsequent analyses to control for the initial disparity.

***Sample attrition.*** It is important in longitudinal studies to consider the potential effects of bias due to the loss of subjects over an extended period of study (Pallas, Natriello, & McDill, 1989). Sample attrition is not necessarily a problem unless it occurs in a systematic fashion that has differential effects on the two samples. One potential source, particularly for Latino students, is *grade retention* (De La Rosa & Maw, 1990). By the sixth grade, a number of students in each program had been retained. Data were collected in the winter of 1990 on the grade level of all students in the longitudinal sample (i.e., all students who began first grade in 1984 who were still in the El Paso school district). By normal patterns of promotion, all these students should have been sixth graders.

Nine percent of the students *in each sample* were in the fifth grade because they had been retained. One percent of the students in each sample were in the seventh grade due to early promotion. The remaining 90% were at their expected grade level. Because the percentages were identical in the two programs, and because 90% of each sample progressed through the first 6 years of school at the normal rate, we included only students who had made normal grade-to-grade progress in the final analyses. The "retained" students took a different level of the ITBS, and it would have been impossible to aggregate their scores with those of the sixth graders. Since there is no confound due to grade retention, analysis of only the nonretained sample seemed to be the most appropriate technique.

School districts in the United States that are near the border of Mexico often experience a high rate of *student mobility.* It is not uncommon for some students to begin school in one location and move to another school within the district or to return to Mexico for a time during their elementary school years.

A series of *t* tests was conducted to test for significant differences in academic ability between students who remained in each program for the 4 years of this longitudinal study (grades 4–7) and those who left the district between fourth and seventh grades before 1991. These two groups of students within each program were compared (i.e., those who had test scores from grades 4 to 7 and those who had entered in grade 1 but had left the district between fourth and seventh grade). Eighteen students in the bilingual immersion sample and 36 students in the transitional bilingual program were considered "leavers." The *t* tests comparing "leavers" to those remaining within each program indicated no significant differences in fourth-grade English-language reading ability. These data showed that the samples of remaining students are representative in terms of English-language achievement and that attrition did not have a differential effect on the two samples.

### Teacher Sample

In the spring of 1990, a questionnaire was mailed to all transitional bilingual education and bilingual immersion teachers in grades 1–6 in the district. The return rate for the questionnaires was reasonably high, 56% for transitional bilingual and 52% for bilingual immersion teachers. Sample sizes were 173 for the transitional sample and 134 for the bilingual immersion sample.

All teachers in both samples were certified bilingual teachers. Over 80% were Hispanic. The mean number of years of experience in teaching second-language students was comparable for the two groups—7 years for the bilingual immersion respondents, and 8 years for transitional bilingual education teachers. Approximately three-fourths of the teachers in both programs had at least 5 years of experience teaching second-language students.

Teachers were asked to respond in nine statements about their program on a three-point scale on which 3 equaled "agree," 2 equaled "undecided," and 1 equaled "disagree" (see Table 1). Seven of the statements were identical on both sets of questionnaires; each program had two items unique to that program. Teachers were also asked to respond to several open-ended questions about their respective programs.

## Results

### Student Achievement from Fourth to Seventh Grade

Results of the longitudinal analyses are presented in Table 2. Two × four analyses of covariance were performed on ITBS scores at each grade for language and reading. A 2 × 3 analysis of covariance was performed on vocabulary, since students were not tested in this area in grade 4. The OLDM English score (on entry into school) was used as the covariate, since there was

TABLE 1. Teachers' Responses (in %) to Questionnaire Items

| Questionaire Items | Bilingual Immersion ($N$ = 134) | | | Transitional Bilingual ($N$ = 173) | | | $\chi^2$ |
|---|---|---|---|---|---|---|---|
| | Disagree | Undecided | Agree | Disagree | Undecided | Agree | |
| 1. Most students will succeed in the regular program after they have completed the specialized program. | 9 | 18 | 73 | 30 | 25 | 45 | 27.3*** |
| 2. The program successfully develops students' oral English skills. | 10 | 16 | 74 | 38 | 26 | 36 | 42.0*** |
| 3. The program motivates students to learn English. | 9 | 12 | 79 | 43 | 22 | 35 | 43.4*** |
| 4. The program develops and maintains students' Spanish-language skills. | 6 | 16 | 78 | 11 | 17 | 72 | 2.6 |
| 5. The program motivates students to read and enjoy stories. | 8 | 12 | 80 | 23 | 29 | 48 | 32.4*** |
| 6. Thematic units were regularly used in my classroom this year. | 14 | 23 | 63 | 34 | 35 | 31 | 25.3*** |
| 7. The program successfully develops students' grammar, punctuation, and spelling skills. | 16 | 26 | 58 | 24 | 20 | 56 | 3.3* |

*$p < .05$.
***$p < .001$.

a slight difference in students' first-grade scores.

Normal curve equivalent (NCE) scores on the ITBS were utilized for the analyses of covariance. The mean NCE scores were then converted to percentile ranks.

The 2 × 4 analysis of covariance on ITBS *language* showed a significant interaction, $F(3,732) = 15.12$, $p < .001$. Because of the presence of interaction, analyses of simple effects were conducted. These revealed significant differences between programs for grade 4, $F(1,225) = 27.37$, $p < .001$; grade 5, $F(1,225) = 8.03$, $p < .005$; and grade 6, $F(1,225) = 3.96$, $p < .05$, favoring the bilingual immersion approach. The difference for grade 7 was not significant. Main effects were also significant for type of program, $F(1,243) = 11.8$, $p < .01$; and time, $F(3,732) = 5.83$, $p < .001$.

Tukey post hoc tests revealed that the performance of students in the transitional bilingual education program increased significantly over the 4 years. In particular, grade 7 performance was significantly higher than any other grade. The tests also revealed significant growth between grades 4 and 6. No similar improvement was found for bilingual immersion students who had moved to English instruction approximately

4 years earlier. Unlike the bilingual immersion students who began full-day English-language instruction in grade 3 or 4, most of the transition students did not begin English instruction until grade 5 or 6, so this is when the greatest gain would be expected.

The 2 × 4 analysis of covariance for reading revealed a significant main effect for type of program, $F(1,243) = 4.70$, $p < .05$. Although the interaction was not significant, the magnitude of the difference in grades 6 and 7 is substantially less than in grades 4 and 5. The 2 × 3 analysis of covariance for vocabulary revealed neither a significant main effect for type of program nor a significant interaction. Note that performance on this measure is particularly low compared to national norms.

Overall, the data show a consistent pattern. In the fourth grade, bilingual immersion students demonstrated superior academic performance in all areas assessed. Over time, differences between the two groups decreased.

### Rate of Entry into Mainstream Classes

In spring of 1990, when students were in the sixth grade, 65% of the transitional bilingual students were in mainstream classes, whereas 99% of the sixth graders who had been in the bilingual immersion program were in mainstream classes. This difference was statistically significant ($\chi^2 = 46.3$, $p < .001$). It indicates that, as they were supposed to, students in the immersion program entered the mainstream significantly more rapidly than students in the transitional bilingual program.

### Teachers' Questionnaire Responses

Table 1 presents data from the Likert scale items on the teacher questionnaire. Responses from teachers in the two programs differed significantly on all but one item. Perhaps the most important difference is in the teachers' feelings about whether students could succeed in mainstream classrooms after completing the program. Seventy-three percent of the bilingual immersion teachers thought their students would succeed, whereas only 45% of transitional bilingual education teachers believed their students would succeed in subsequent years. This difference was significant at the .001 level. Over half of the transitional bilingual education teachers thought that their program was not suffi-

TABLE 2. Scores from Grades 4–7 (in Normal Curve Equivalence Units) for Immersion and Transitional Students on Iowa Tests of Basic Skills

| | Bilingual Immersion ($N = 111$) | | | Transitional Bilingual ($N = 117$) | | |
|---|---|---|---|---|---|---|
| Grade | *M* | SD | Percentile | *M* | SD | Percentile |
| Total language: | | | | | | |
| 4 | 46.52 | 15.40 | 44 | 36.12 | 13.97 | 26 |
| 5 | 43.97 | 14.73 | 39 | 38.52 | 14.20 | 30 |
| 6 | 43.19 | 15.09 | 37 | 39.22 | 15.55 | 30 |
| 7 | 44.36 | 16.91 | 39 | 43.23 | 15.74 | 37 |
| Total reading: | | | | | | |
| 4 | 32.21 | 12.71 | 20 | 28.30 | 12.67 | 15 |
| 5 | 33.01 | 12.27 | 21 | 30.47 | 14.12 | 17 |
| 6 | 33.59 | 13.60 | 23 | 32.79 | 14.63 | 21 |
| 7 | 34.65 | 14.22 | 24 | 33.49 | 14.68 | 21 |
| Vocabulary: | | | | | | |
| 5 | 28.27 | 12.41 | 15 | 24.79 | 24.77 | 12 |
| 6 | 27.65 | 13.58 | 15 | 25.96 | 25.95 | 13 |
| 7 | 28.63 | 14.78 | 16 | 27.91 | 27.73 | 15 |

NOTE.—Covariance-adjusted mean scores are used throughout the table.

cient to prepare students to succeed in subsequent years.

Seventy-four percent of the bilingual immersion teachers indicated that their program developed students' oral English fluency and capacity; 79% felt that the immersion program motivated students to learn English. Only 36% of the transitional teachers viewed their program as successful in developing English-language proficiency, and a similar proportion (35%) indicated that the program motivated students to learn English. Both these differences were significant at the .001 level. Thus, two-thirds of the transitional bilingual education teachers responding questioned whether the rate of introduction of English was too slow.

There was also a significant difference favoring bilingual immersion in the extent to which the immersion teachers believed that the program motivated students to read and enjoy stories (item 5, $p < .001$). There was less ambivalence among the immersion teachers concerning the program's ability to develop students' writing abilities than there was in the transitional program (item 7, $p < .05$). Only on item 4 were differences between the two groups of teachers not significant. Seventy-two percent of the transitional bilingual education teachers and 78% of the bilingual immersion teachers agreed that their programs developed and maintained students' Spanish-language skills. Even though students in the immersion program spent a far smaller percentage of time being taught in Spanish, most teachers believed that students still developed and maintained Spanish-language skills.

### Teachers' Responses to Open-ended Questions

***Bilingual immersion.*** The first open-ended question asked teachers what they thought was the greatest strength of their program. Thirty-two teachers (24%) in the bilingual immersion program mentioned students' rapid growth in the acquisition of English. They cited innovative methods used to teach English, including the use of English in all content areas (including math) from grade 1, noting that the program "surrounds students with English" throughout the day.

Twenty-one teachers (16%) mentioned the 30–90-minute Spanish-language component as bilingual immersion's greatest strength. They said the use of Spanish fostered students' self-esteem, kept the children from being intimidated, and built a strong foundation for acquiring English. Eleven others (8%) identified the program's flexibility as its greatest strength, allowing teachers to integrate all subjects and adapt the curriculum to the needs of different children.

Immersion teachers identified two areas of concern. The primary concern, voiced by 18% of the teachers, was a lack of structure. Some of these teachers wanted curriculum materials that would help them teach students grammatical and writing skills systematically for some of the day. Some saw the need for teachers' guides as a possible resource; they mentioned their insecurity about having to develop the entire day's curriculum without any teacher's guide or curriculum series.

Eight teachers mentioned one other issue concerning instructional materials. Gersten (in press) observed that teachers in bilingual immersion classrooms often used below-grade-level reading materials to match students' English-language level. Several teachers indicated that bilingual immersion instruction in the upper grades should involve as much grade-level material as possible so that students are better prepared for the demands of middle school mainstream classrooms.

***Transitional bilingual education.*** When asked to name the most positive feature of transitional bilingual education, 43% of the teachers cited the emphasis on Spanish. They gave various reasons for this selection. Some cited the transfer concept (Cummins, 1989; Hakuta, 1986)—the opportunity for students to build a strong foundation in their home language before

making the transition to an all-English program. At least 12 teachers (7%) praised the idea of teaching academic subjects in Spanish so that students would not fall behind in these areas. Other open-ended responses indicated that the greatest strength of bilingual education was that students feel comfortable in school being allowed to use their home language there.

Almost an equal proportion of teachers (38%) cited this same facet of the program, the emphasis on Spanish, as the major shortcoming. A small but sizable proportion (approximately 10%) responded to the open-ended questions with deep ambivalence. For example, one of the most philosophical teachers commented, "The Spanish component is both the greatest strength and the greatest weakness."

Several teachers noted that, in their judgment, too few students made the transfer from Spanish to English successfully. Several teachers thought that students relied too heavily on Spanish and were reluctant to use English in conversational or academic contexts. One teacher observed, "Since the major part of the day is spent in Spanish, students are not motivated to learn English. I have seen students who have spent 5 years in the program but cannot communicate in English. A more intensive English program is needed."

Twenty-five teachers (15%) complained that the program was holding students back or that students stayed in the program too long. Several teachers commented that the program separated students from their English-dominant peers for many years. One teacher said, "It takes away the child's natural interaction with other peers who are already proficient in the use of the English language. Association and peer influence are two of the most powerful tools that students use to learn new skills."

No other dominant themes emerged, but teachers cited various program strengths, including the quality of instructional materials, the amount of structure in the program, and instructional grouping arrangements that allowed for individual differences in level of proficiency among students.

### Student Interviews

We selected 30 students from each program for interviews in the spring of 1990. Students were randomly chosen from those who had completed 4 full years of either bilingual immersion or transitional bilingual education. Most of the students were sixth graders; due to retention, five students were still in fifth grade. Students were interviewed during their second year in a mainstream English class. Only one of the 60 students refused to be interviewed. The same researcher conducted all the interviews, meeting with groups of about three to five students at a time. Details of interviews are reported in Gersten, Woodward, and Schneider (1992) and El Paso Independent School District (1990); only highlights are reported here.

The interviewer asked students to discuss which subjects were easiest and hardest, which language they currently felt most comfortable speaking, and to describe their recollections of their first few years in school in a bilingual program. Only a small number of students in either group expressed negative feelings about their early experiences with a bilingual program. Six students in the transitional program indicated that they found learning in two languages confusing. Three of the bilingual immersion students said they would have liked to continue some Spanish-language instruction longer. Almost a third of the students in each group felt more comfortable speaking Spanish than English.

Perhaps the most interesting finding from the student interviews was that no notable differences were found in any area of inquiry. Over half the students in each group found either language arts or social studies to be the most difficult school subject. They indicated that some of the reading material in the mainstream classes was too hard. About half the students in each group liked math best, in large part because

it was the one academic subject in which they could fully comprehend instruction.

## Discussion

Too often, social scientists search for significant differences among instructional approaches. Our longitudinal evaluation generally produced a lack of significant differences in achievement test scores by the seventh grade in all areas but reading, where the effect was small. As in all quasi-experimental designs, some other unmeasured variables may affect relative patterns of performance. However, students came from similar socioeconomic status backgrounds, had similar English-language proficiency scores at entry, and there is no evidence that attrition had differential effects on the two samples on the key dependent variable in this study, English-language achievement in reading and language. For these reasons, these findings hold important implications for the field of bilingual education.

A first question is essential to research and evaluation. After different programs "end," when should their effectiveness be evaluated? Unlike Ramírez (1992), for example, we were able not only to compare contrasting models within the same district, but we tracked students for several years after they had left the program—up through the seventh grade. Had our longitudinal evaluation ended at fifth grade, as did the Ramírez (1992) study, a different and entirely incorrect conclusion might have been drawn—that bilingual immersion was superior to transitional bilingual education. Instead, a strict interpretation of our longitudinal comparisons of seventh-grade achievement indicates that bilingual immersion and transitional bilingual education are equally viable options, although teachers' perceptions of the two programs appear notably different.

Another possible interpretation of the pattern of effects, one based on a recently developed statistical procedure known as the trajectory analysis of matched percentiles (Cziko, 1992), suggests that transitional bilingual education students will continue to "catch up" and perhaps surpass the bilingual immersion students in subsequent years. After all, the relative progress on the ITBS during sixth and seventh grades was higher for the transitional bilingual education students than the bilingual immersion students.

However, large increases in English-language achievement test scores for students during their first 2 years of English-language instruction are common; invariably students then reach a plateau. This phenomenon seems due to the fact that students are becoming familiar with the form of English language in which the test is written and the type of language used in the items (Baker & de Kanter, 1983; Cziko, 1992; Gersten et al., 1984). To date, there is no evidence of continued acceleration after this initial 2-year period, particularly when one looks at the overall scores.

The data clearly indicate that both programs—at least as measured by the ITBS—are failing many students in the areas of reading comprehension and vocabulary. The mean seventh-grade scores on the ITBS correspond to the twenty-fourth percentile for bilingual immersion and to the twenty-first for transitional bilingual education in reading comprehension, and to the sixteenth and fifteenth percentiles, respectively, in vocabulary (see Table 2). These results suggest that the vocabulary in most junior high school textbooks is well beyond the levels these students can readily comprehend (Jiménez, García, & Pearson, in press).

In reading comprehension, slightly less than one-third of the students are at or above grade level. Generally low-socioeconomic minority students in the United States achieve at about this level (Becker & Gersten, 1982; De La Rosa & Maw, 1990; Pallas et al., 1989). Thus, the problem is not endemic to El Paso. However, much more work is needed in reforming and restructuring the middle school curriculum for mi-

nority students (Chamot, 1992; George, Stevenson, Thomason, & Beane, 1992).

This longitudinal study also illustrates the limitations of using standardized measures such as the ITBS as a basis for evaluating bilingual programs. The ITBS is, at best, a rough gauge of any program's effectiveness, and language-minority students often experience problems on traditional standardized achievement tests (García, 1991; Pearson & Valencia, 1987). The ITBS vocabulary test was likely to be extremely difficult for students in both samples since they were asked to provide synonyms and antonyms for a series of words, without any context clues. A different pattern of effects might be found with newer forms of assessment that utilize longer reading passages and more open-ended responses and writing samples and rely less on familiarity with mainstream culture.

Moreover, many potential benefits of innovative instructional approaches such as the one used in the bilingual immersion program may not be evident in ITBS scores. In reviewing earlier research on bilingual immersion in El Paso, Teschner (1990, pp. 15–16) noted that "one cannot overlook the strong likelihood that the context of English exposure . . . is at least as important . . . as the greater exposure itself." Teschner's observational findings parallel our own observational research (Gersten, in press), particularly studies conducted in bilingual immersion classrooms. These findings are also consistent with a growing view held by prominent bilingual educators (Cummins, 1992; Ortiz, 1988; Rueda, 1990), that program labels appear to be less important than the nature of instructional interactions (Cummins, 1992; Rueda, 1990) in understanding what practices are most effective.

When the methods used to teach English are fully integrated into content-area instruction, students are engaged in activities that go beyond what the ITBS measures. Students learn English by writing in journals, discussing children's literature, and by making and evaluating predictions about what they read. Such activities not only foster a spontaneous use of English in conversations but also promote cognitive development. This seems preferable to the contrived nature of conventional ESL instruction.

The teacher survey results provide a sense of potential benefits of the bilingual immersion program. Many teachers preferred the more rapid introduction of English utilized in bilingual immersion. They tended to like the merging of English-language instruction with content-area instruction, particularly in reading and writing. The finding that immersion teachers found the program more motivating than the transitional bilingual education teachers may be due to the use of children's literature as a means of teaching English in the immersion program. The early introduction of English-language content instruction necessitated extensive elaboration by teachers and more conversation about books than is typical (Gersten, in press). These activities are typically much more abbreviated when reading and writing instruction occur in students' native language—be it Spanish or English (Durkin, 1990).

At least some of the transitional bilingual education teachers thought that English should be introduced more rapidly than in their program, thus making the program more closely resemble bilingual immersion. The reader may wonder why teachers felt so much more positively about the bilingual immersion approach, whereas the longitudinal data did not support its superiority. However, the teachers were responding to what they saw in the elementary grades when students were in a specialized bilingual program, not the scores obtained in the seventh grade, when all students had entered the mainstream. The ITBS results for grades 4 and 5 do show superior performance in all academic areas for students in the bilingual immersion program. It is probably true that teachers were, in some respects, responding to observed level of performance in English-language reading and writing activities. We also can-

not discount the fact that teachers may have perceived aspects of academic performance not measured by the test.

The bilingual immersion teachers thought their students made the transition into mainstream English classes more smoothly. These data are worth considering as one tries to understand the implications of these findings.

Concerning educational policy, the lack of significant differences between the two programs in seventh-grade achievement supports increased choice and experimentation by teachers and administrators, based on their experiences, the types of communities their schools serve, and the preference of community members. One positive aspect of a bilingual immersion program is that it can be implemented with one bilingual teacher for every three to five classrooms. Using a team teaching model, this bilingual teacher could teach the Spanish component for all three to five classes, since this component tends to last from 30 to 90 minutes per day. Considering the large shortage of qualified and certified bilingual teachers nationwide (Gold, 1992), this could be a definite advantage for large urban districts that have difficulty filling bilingual positions. It could be equally advantageous for smaller districts that have only one or two bilingual teachers per district but that have many students requiring some type of second-language instruction.

Our results cause one to question the assertion of Wong-Fillmore and Valadez (1986) and others that meaningful literacy instruction in English cannot begin until students have experienced many years of native-language instruction. A decade ago, Barrera (1984 p. 170), a noted bilingual educator, observed, "The beginning of second-language reading can be a natural, learner-initiated, and learner-controlled occurrence when children approach reading as a desirable, useful, and meaningful activity. . . . Second-language reading can commence soon after native-language reading begins, or develop virtually alongside it, as long as the learner is making sense of the written language he or she encounters."

These findings indicate that experimentation with various approaches should be encouraged. As Cziko (1992, p. 15) noted, "Knowledge that a number of alternative approaches can be effective in educating language-minority students provides those responsible for educating our children with the freedom to choose programs that are consistent with the goals, values, and resources of the local community."

The goal of building competence in English without unduly frustrating students requires a complex balance between utilization of the native language and the language to be acquired. More research needs to be done to isolate, document, and understand practices that enhance comprehension and other types of cognitive growth. Observational research that isolates and articulates these factors appears to be the next step (Gersten, in press; Reyes, 1992).

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